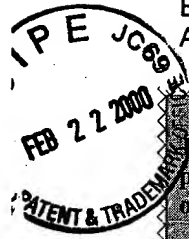


IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Sasisekharan, et al.  
 Serial No: 09/384,959  
 Filed: August 27, 1999  
 For: RATIONALLY DESIGNED HEPARINASES DERIVED  
 FROM HEPARINASE I AND II  
 Examiner: Unassigned  
 Art Unit: 1643



THE ASSISTANT COMMISSIONER FOR PATENTS  
 WASHINGTON, D.C. 20231

Sir:

Transmitted herewith are the following documents:

- ☒ Information Disclosure Statement
- ☒ Form 1449 and References Cited
- ☒ Return Receipt Postcard

If the enclosed papers are considered incomplete, the U.S. Patent and Trademark Office is respectfully requested to contact the undersigned at (617)720-3500, Boston, Massachusetts.

If any fee is required, please charge to the account of the undersigned, Deposit Account No. 23/2825. A duplicate of this sheet is enclosed.

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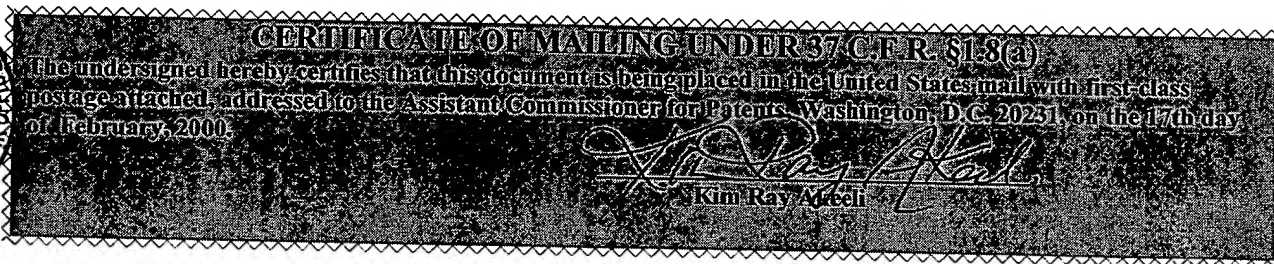
By: Helen C. Lockhart  
 Helen C. Lockhart, Registration No. 39,248  
 Wolf, Greenfield & Sacks, P.C.  
 600 Atlantic Avenue  
 Boston, MA 02210  
 Tel. (617)720-3500

Docket No. M0656/7046  
 Dated: February 17, 2000  
 NDD

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Assistant Commissioner for Patents  
Washington, D.C. 20231

**STATEMENT FILED PURSUANT TO THE DUTY OF  
DISCLOSURE UNDER 37 CFR §§1.56, 1.97 AND 1.98**

Sir:

Pursuant to the duty of disclosure under 37 C.F.R. §§1.56, 1.97 and 1.98, the Applicants request consideration of this Information Disclosure Statement.

**Compliance with 37 C.F.R. §1.97**

This Information Disclosure Statement has been filed before the filing date of a first office action, therefore there is no fee due.

**Information Cited**

The Applicants hereby make of record in the above-identified application the information listed on the attached form PTO-1449 (modified). The order of presentation of the references should not be construed as an indication of the importance of the references.

**Other Information**

The Applicants hereby make the following additional information of record in the above-identified application:

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The following is a related pending U.S. non-provisional applications which does not appear on the 1449 form.

Serial No.

Filing Date

09/066,481

October 30, 1996

Remarks

A copy of each of the above-identified information is enclosed unless otherwise indicated on the attached form PTO-1449 (modified). It is respectfully requested that:

1. The Examiner consider completely the cited information, along with any other information, in reaching a determination concerning the patentability of the present claims;
2. The enclosed form PTO-1449 be signed by the Examiner to evidence that the cited information has been fully considered by the Patent and Trademark Office during the examination of this application;
3. The citations for the information be printed on any patent which issues from this application.

By submitting this Information Disclosure Statement, the Applicants make no representation that a search has been performed, of the extent of any search performed, or that more relevant information does not exist.

By submitting this Information Disclosure Statement, the Applicants make no representation that the information cited in the Statement is, or is considered to be, material to patentability as defined in 37 C.F.R. §1.56(b).

By submitting this Information Disclosure Statement, the Applicants make no representation that the information cited in the Statement is, or is considered to be, in fact, prior art as defined by 35 U.S.C. §102.

Notwithstanding any statements by the Applicants, the Examiner is urged to form his own conclusion regarding the relevance of the cited information.

An early and favorable action is hereby requested.

Respectfully submitted,

By: 

Helen C. Lockhart, Registration No. 39,248  
Wolf, Greenfield & Sacks, P.C.  
600 Atlantic Avenue  
Boston, MA 02210  
Tel. (617)720-3500

Docket No. M0656/7046  
Dated: February 17, 2000

LIST OF PATENTS AND PUBLICATIONS FOR APPLICATION'S  
INFORMATION DISCLOSURE STATEMENT

SASISEKHARAN et al.

FILING DATE: August 27, 1999

GROUP: 1643

## U.S. PATENT DOCUMENTS

Exam Init	Ref Des	Document No.	Date	Name	Class	Sub Class	FILING DATE If Appropriate
	A1	4,281,108	07/28/81	Fussi	536	21	
	A2	4,745,105	05/17/88	Griffin et al.	514	56	
	A3	4,757,056	07/12/88	Van Gorp et al.	514	54	
	A4	4,942,156	07/17/90	Foley et al.	514	56	
	A5	4,990,502	02/05/91	Lormeau et al.	514	56	
	A6	5,010,063	04/23/91	Piani et al.	514	56	
	A7	5,039,529	08/13/91	Bergendal et al.	424	630	
	A8	5,106,734	04/21/92	Nielsen	435	84	
	A9	5,152,784	10/06/92	Tsilibary	623	1	
	A10	5,169,772	12/08/92	Zimmerman et al.	435	232	
	A11	5,204,323	04/20/93	Findlay et al.	514	2	
	A12	5,252,339	10/12/93	Cristofori et al.	424	479	
	A13	5,262,325	11/16/93	Zimmermann et al.	435	269	
	A14	5,290,695	03/01/94	Morikawa et al.	435	232	
	A15	5,338,677	08/16/94	Zimmermann et al.	435	200	
	A16	5,474,987	12/12/95	Cohen et al.	514	56	
	A17	5,576,304	11/19/96	Kakkar et al.	514	56	
	A18	5,599,801	02/04/97	Branellec et al.	514	56	
	A19	5,618,917	04/08/97	Toback et al.	530	350	
	A20	5,681,733	10/28/97	Su et al.	435	232	
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	A22	5,753,445	05/19/98	Fillit et al.	435	7.1	
	A23	5,763,427	06/09/98	Weitz et al.	514	56	
	A24	5,922,358	07/13/99	Doutremepuich et al.	424	553	
	A25	5,795,875	08/18/98	Holme et al.	514	56	
	A26	5,808,021	09/15/98	Holme et al.	536	21	
	A27	5,824,299	10/20/98	Luster et al.	424	85.1	
	A28	5,919,693	07/06/99	Su et al.	435	252.3	
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	A30	6,013,628	01/11/00	Skubitz et al.	513	12	
	A31	5,164,378	11/17/92	Conti, et al.	514	56	
	A32	5,830,726	11/3/98	Sasisekharan et al.	435	172.3	
	A33	5,714,376	2/3/98	Sasisekharan et al.	435	252.3	
	A34	5,619,421	4/8/97	Venkataraman et al.	346	496	
	A35	5,569,600	10/29/96	Sasisekharan et al.	435	220	
	A36	5,567,417	10/22/96	Sasisekharan et al.	424	94.5	
	A37	5,389,539	2/14/95	Sasisekharan et al.	435	220	
	A38	4,443,545	4/17/84	Langer, Jr. et al.	435	232	
	A39	4,396,762	8/2/83	Langer, et al.	536	21	
	A40	4,373,023	2/8/83	Langer, et al.	435	2	
	A41	4,341,869	7/27/82	Langer, Jr. et al.	435	232	

**FOREIGN PATENT DOCUMENTS**

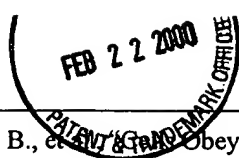
	Country & Doc. No. (11)	Pub. Date (43)		Class	Sub Class	Translation Yes No
B1	EP 0 433 225 A1	11/27/90	Ciba-Geigy AG			
B2	EP 0 557 887 A2	02/18/93	Opocrin S.p.A.			
B3	WO 93/19096	09/30 93	Cancer Research Campaign Techn., Ltd.			
B4	WO 94/21689	09/29/94	Cancer Research Campaign Techn., Ltd.			
B5	WO 97/16556	05/09/97	Massachusetts Institute of Technology			
B6	PCT/US96/17310	10/30/96	PCT Search Report			
B7	WO93/08289	04/29/93	Massachusetts Institute of Technology			

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C2	Robert J. Linhardt, Ph.D. et al., "Production and Chemical Processing of Low Molecular Weight Heparins," <i>Seminars in Thrombosis and Hemostasis</i> , Vol. 25, Suppl. 3, 1999, pp. 5-16
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C4	Richard L. Jackson et al., "Glycosaminoglycans: Molecular Properties, Protein Interactions, and Role in Physiological Processes", <i>Reviews</i> , Vol. 71, No. 2, April, 1991, pp. 481-539
C5	Gerald W. Hart, "Glycosylation", <i>Current Opinion in Cell Biology</i> , 1992, 4:1017-1023
C6	Pita Enriquez-Harris et al., "Growth Factors and the Extracellular Matrix", <i>Meeting Report</i> , Trends in Cell Biology, 1994
C7	Fred E. Cohen, "The Parallel $\beta$ Helix of Pectate Lyase C: Something to Sneeze At, <i>Science</i> , Vol. 260, June 4, 1993, pp. 1444-1445
C8	Ulrich Baumann et al., "Three-dimensional structure of the alkaline protease of <i>Pseudomonas aeruginosa</i> : a calcium binding parallel beta roll motif", <i>The EMBO Journal</i> , vol. 12, no. 9, pp. 3357-3364, 1993
C9	Marilyn D. Yoder et al., "Unusual structural features in the parallel $\beta$ -helix in pectate lyases", <i>Structure</i> , December 15, 1993, 1:241-251
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C19	Bernstein, H., et al., <i>Methods in Enzymology</i> , (1988), 137:515-529
C20	Cardin, A., et al., <i>Arteriosclerosis</i> , (1989), 9:21-32
C21	Comfort, A., et al., <i>Biotech and Bioeng.</i> , (1989), 34:1383-1390,
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C28	Lohse, D., et al., <i>J. Biol. Chem.</i> , (1992), 267:24347-24355
C29	Sasisekharan, R., et al., <i>Natl. Acad. Sci.</i> , (1993), 90:3660-3664
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C31	Yang, V., et al., <i>J. Biol. Chem.</i> , (1985), 260:1849-1857
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C33	Zucharski, L., et al., "Blood Coagulation Activation in Cancer: Challenges for Cancer Treatment", <i>Hamostaseologie</i> , 1995, 15:14-20
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